



Empowering  
the **next level**  
of green mobility  
and energy.

CharIN – Charging Interface Initiative e. V.

## Maximizing Interoperability with certified Conformance Tests

Power2Drive - The Future of CCS Charging: Have We Seen the Best of CCS Yet?

Wednesday, May 7, 2025



**Antitrust Statement:** In discharging their responsibilities, members of CharIN e. V. (association) function as individuals and not as agents or representatives of any organization with which they may be associated.

In the course of all CharIN activities, members and participants must avoid discussion about pricing, sales and marketing programs, territories, customers, production capacity and other competitively sensitive topics. In the event any participant ever feels that the course of association activities or statement or actions in association meetings is headed into such an area, participants should raise the issue immediately so that further discussion of such matters can be suspended pending receipt of advice satisfactory to the participants that the topics addressed to not give rise to antitrust problems.

**Patent Disclosure:** Each CharIN member or participant would be required to disclose at specified times during a development process all patents and patent applications that are owned, controlled or licensed by the participant, member's employer or third party and that the participant believes may become essential to the draft specification under development. The participant would make this disclosure based on good faith and reasonable inquiry. If CharIN e. V. receives a notice that a proposed CharIN standards recommendation may require the use of an invention claimed in a patent, the respective part of the CharIN Board Policy will be followed.

**Transparency Statement:** The CharIN e. V. is committed to transparency at the highest level. All topics are discussed in open meetings and decisions are consensus based (not unanimous). CharIN members are required to be vigilant in their efforts to monitor CharIN association's activities and decisions by actively participating in the meetings and calls. Any issues with the transparency of the CharIN e. V. should be brought to the attention of the CharIN Executive Board for resolution.

Reference: [CharIN Compliance Guideline](#)

# Agenda

Maximizing Interoperability with certified Conformance Tests - May 7, 2025

ID	Topic
1	CharIN's Vision
2	CharIN's Big Picture for Conformance and Interoperability Testing
3	EVSE & EV Conformance & Interoperability Program
4	Conformance Testing Service



## CHARIN

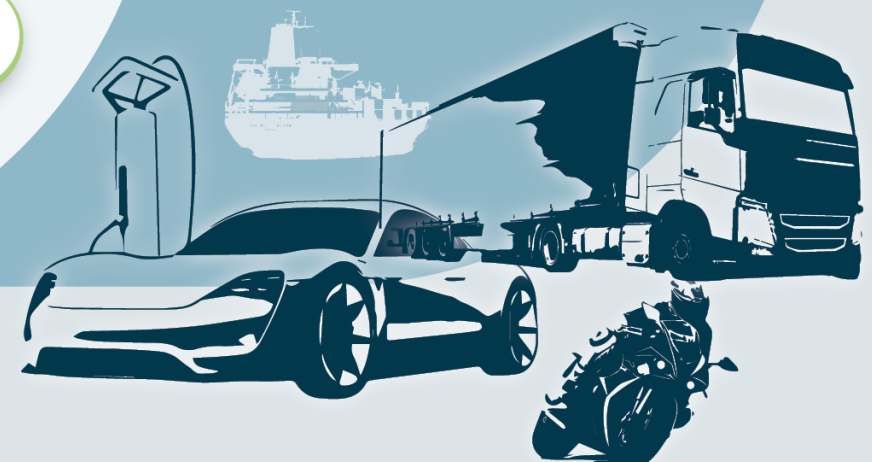
**EMPOWERING THE NEXT LEVEL  
OF GREEN MOBILITY  
AND ENERGY**



CO<sub>2</sub> neutral  
energy



Battery Electric Vehicles  
(BEV)





# 1. CharIN's Vision

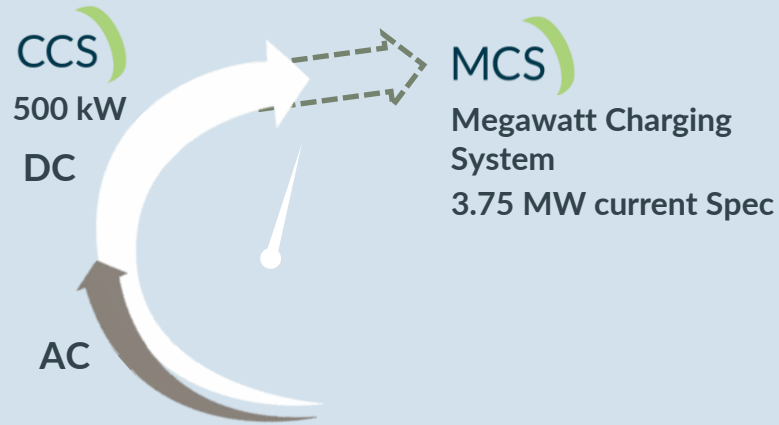
The overall scope

Performance up to

500 kW (CCS)  
4.5 MW (MCS)



Current Developments  
vs.  
Standardization



Added Value

Extended Functionality  
Plug and Charge  
Vehicle to grid &  
Vehicle to home



Worldwide

Asia  
Europe  
America  
MENA  
Australia & Oceania



Scope of application  
Motorbike  
Car  
Bus | Truck  
Airplane  
Ship  
Mining

# Agenda

Maximizing Interoperability with certified Conformance Tests - May 7, 2025

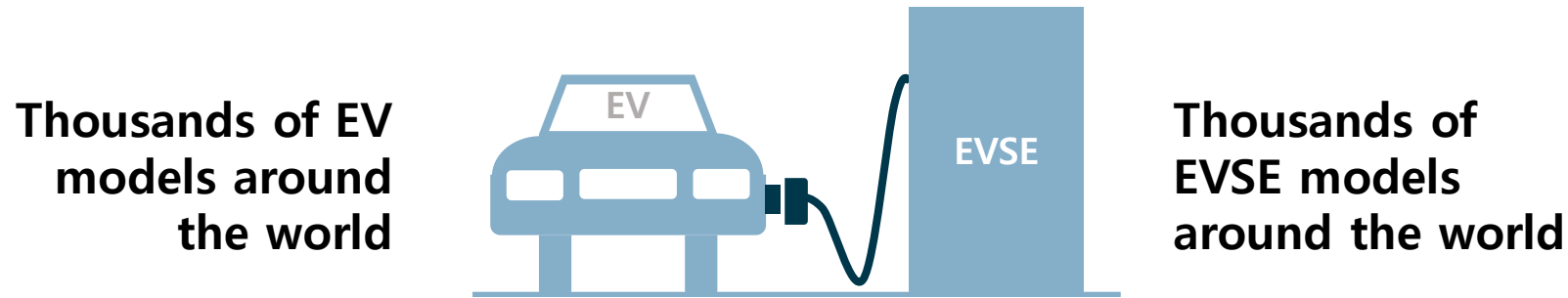


ID	Topic
1	CharIN's Vision
2	CharIN's Big Picture for Conformance and Interoperability Testing
3	EVSE & EV Conformance & Interoperability Program
4	Conformance Testing Service

## 2. CharIN's Conformance and Interoperability Testing

What happens due to the interoperability issues?

Interoperability (IOP) issue in fields



**Unexpected charging start failure**

**Not intended charging stop**

**Sporadic charging stop**

**Not unplugging after charging stop**

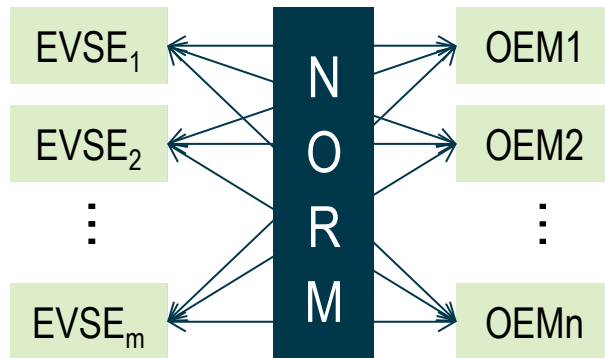
**Longer charging time**

**Uncomfortable**

**Charging failure**

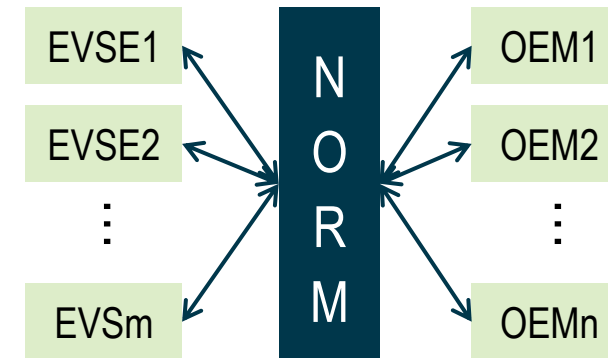
## 2. CharIN's Conformance and Interoperability Testing

### Comparison of testing methods



The purpose of interoperability testing is to prove that end-to-end functionality between (at least) two communicating systems is as required by the standard(s) on which those systems are based

**Limited scalable for growing market**



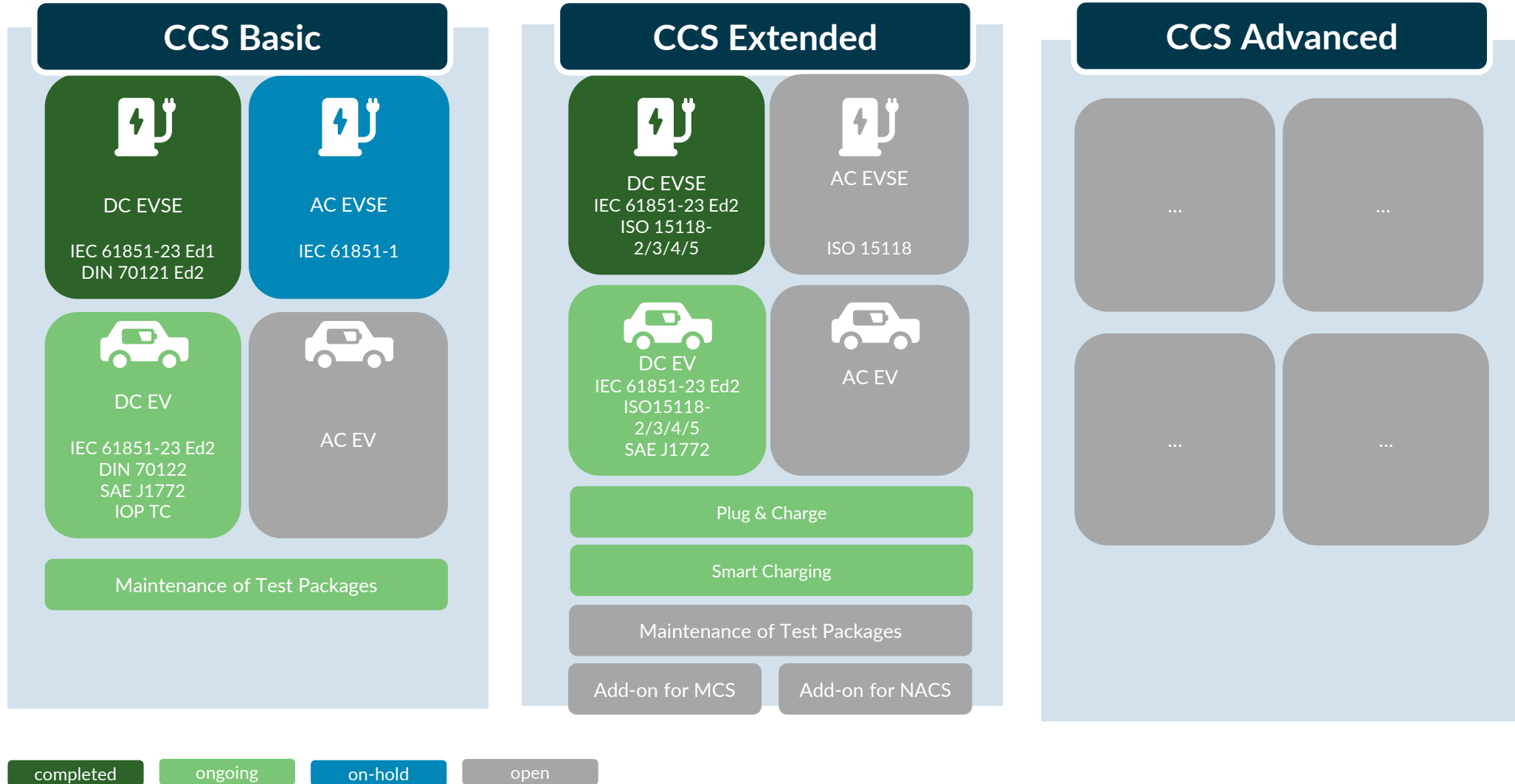
The conformance testing requires the testing of EV and/or EVSE against testing system, which simulates the counterpart as NORM, and is executed according to test cases of test specification

**Scalable for growing market**



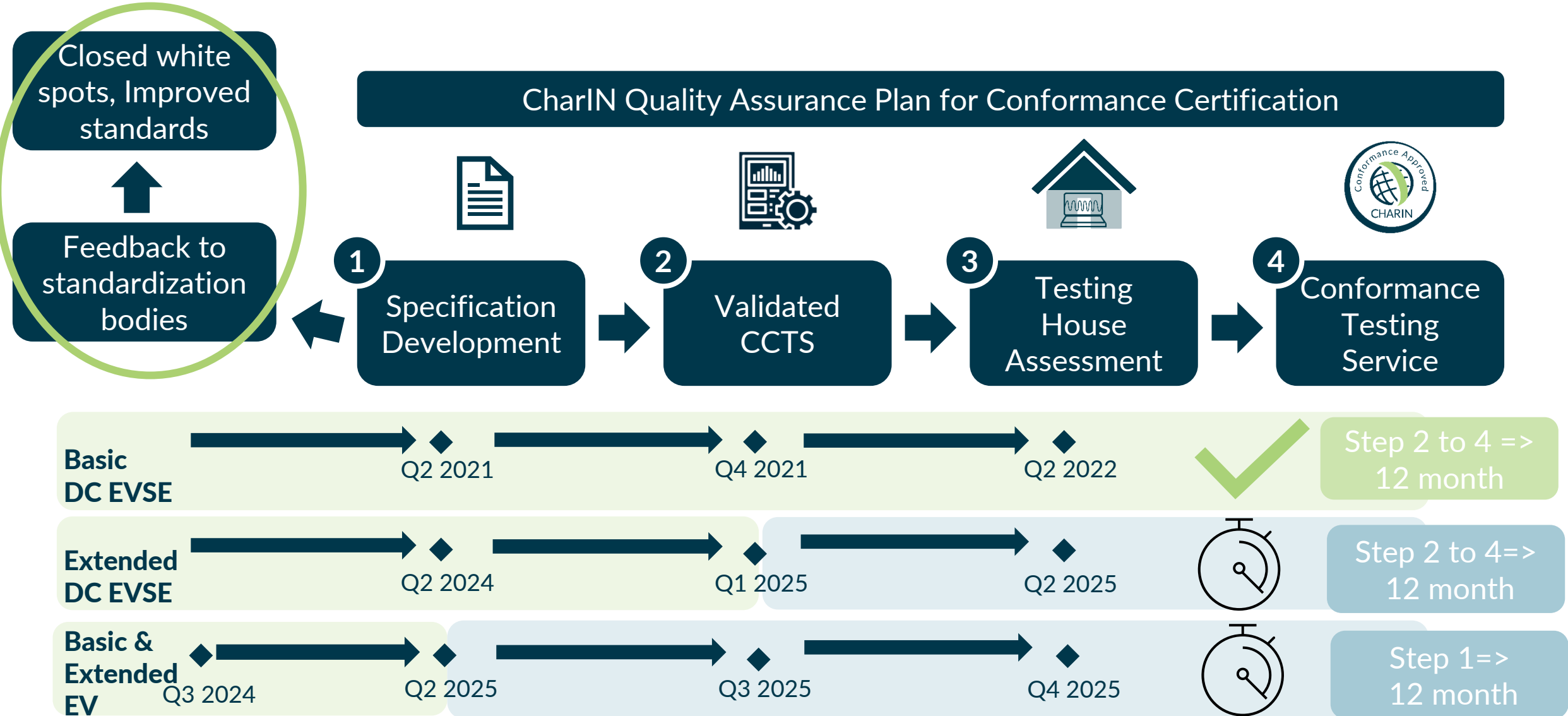
## 2. CharIN's Conformance and Interoperability Testing

Conformance Test/Interoperability - CharIN-s key Milestones



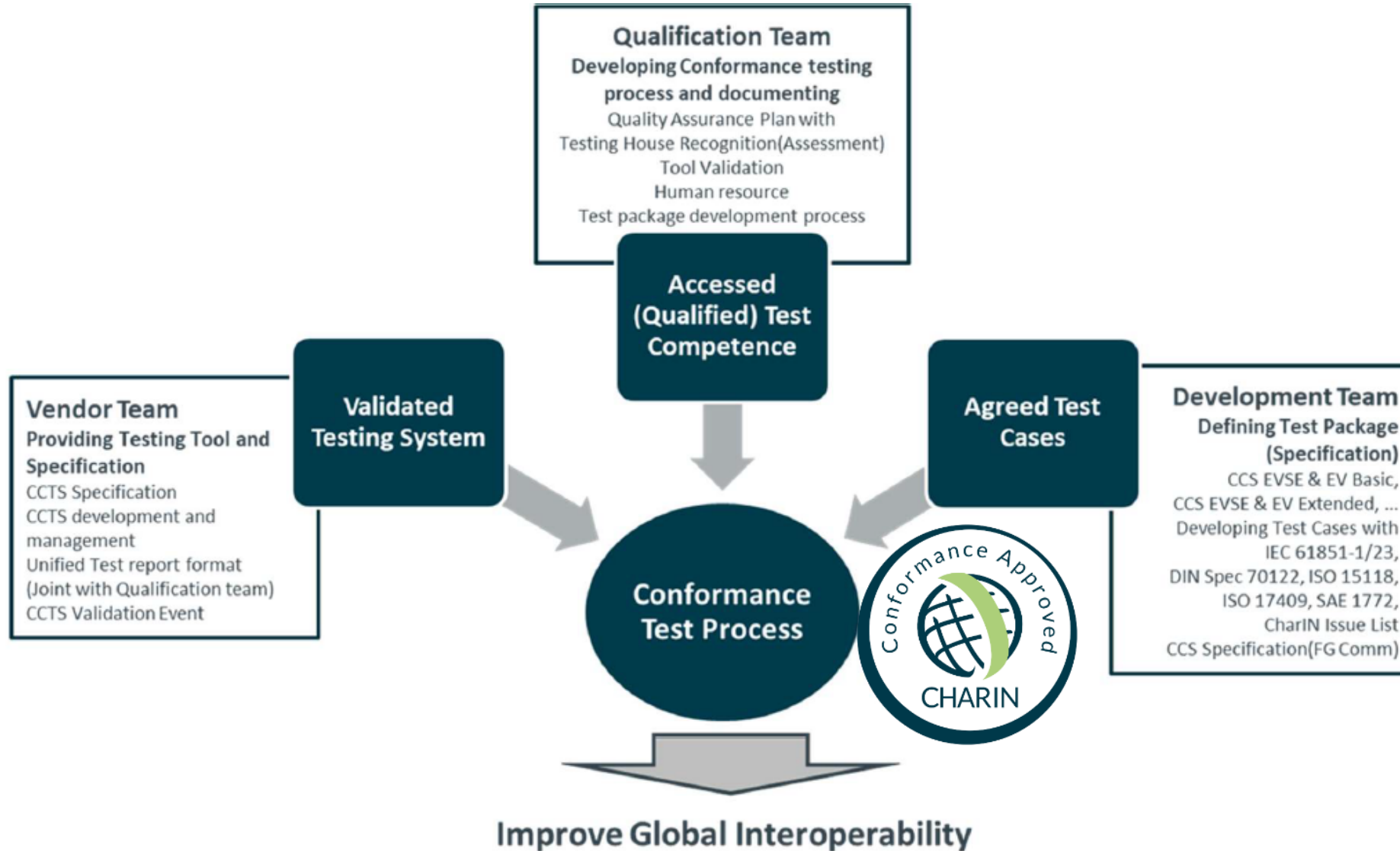
## 2. CharIN's Conformance and Interoperability Testing

### Process Overview



## 2. CharIN's Conformance and Interoperability Testing

Organizational frame of CharIN conformance testing program



# Agenda

Maximizing Interoperability with certified Conformance Tests - May 7, 2025

ID	Topic
1	CharIN's Vision
2	CharIN's Big Picture for Conformance and Interoperability Testing
3	EVSE & EV Conformance & Interoperability Program
4	Conformance Testing Service

### 3. EVSE & EV Conformance & Interoperability Program

EVSE: CCTS validation and testing house recognition process for Conformance testing

#### CCS Basic EVSE DC

DIN Spec. 70122 + CharIN DIN Spec. 70122 Test Case + CharIN test case for IEC 61851-1/23 + Conductive emission test

#### CCS Extended EVSE (DC)

DIN Spec. 70122 + CharIN DIN Spec. 70122 Test Case -> ISO 15118-4/5 + Conductive emission test

CharIN test case for IEC 61851-23 -> IEC 61851-23 Ed2

#### Currently fulfilling 2nd rounds of IEC 61851-23 test cases

1<sup>st</sup> validation round testing and review completed

2<sup>nd</sup> round testing submitted. Finishing reviewing phase

#### CCS Basic EVSE DC

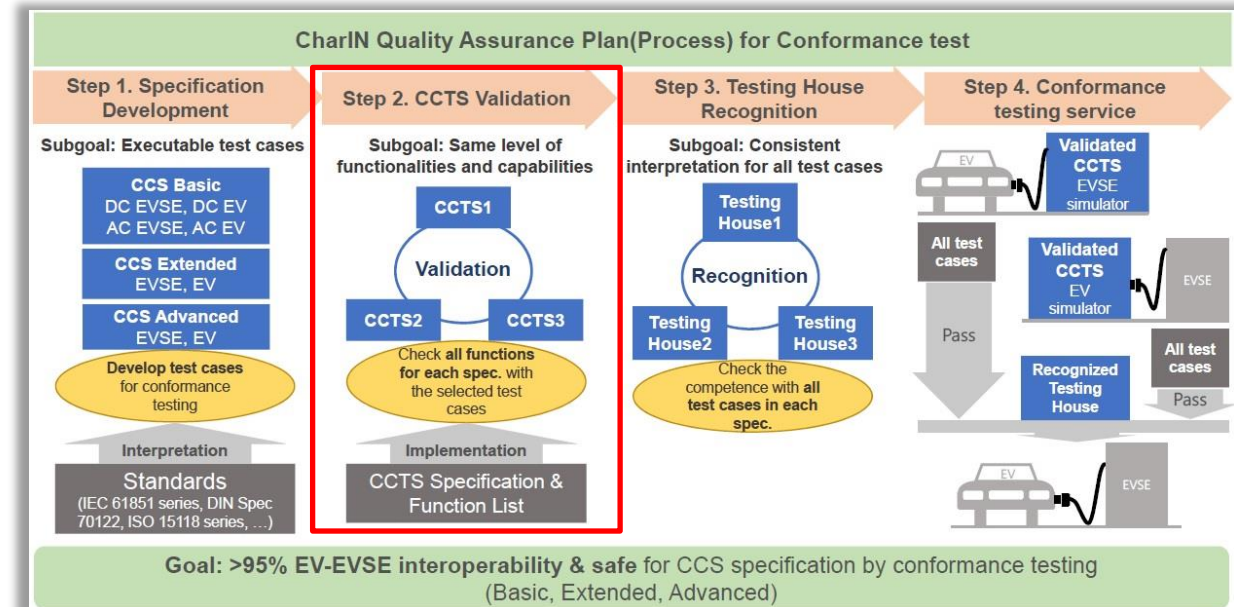
DIN Spec. 70122 +  
CharIN DIN TC

IEC 61851-1/23 with  
DIN Spec. 70121

#### CCS Extended EVSE DC

ISO 15118-4/5

IEC **61851-1/23 Ed2**  
with ISO 15118-2/3



### 3. EVSE & EV Conformance & Interoperability Program

EV: CCTS validation and testing house recognition process for Conformance testing

#### CCS EV DC (Matching Basic EVSE)

DIN Spec. 70122 + CharIN DIN Spec. 70122 Test Case + CharIN test case for IEC 61851-1/23 + SAE J1772 + selected interoperability tests

#### CCS EV DC (Matching Extended EVSE)

SAE J1772 , ISO 15118-4/5 + CharIN test case for IEC 61851-1/23 -> IEC 61851-23 Ed2

#### Validation for test cases

Compare test verdicts of different testing system

##### CCS EV DC (Basic)

DIN Spec. 70122 +  
CharIN DIN TC

IEC 61851-1/23 Ed. 2  
with DIN Spec. 70121

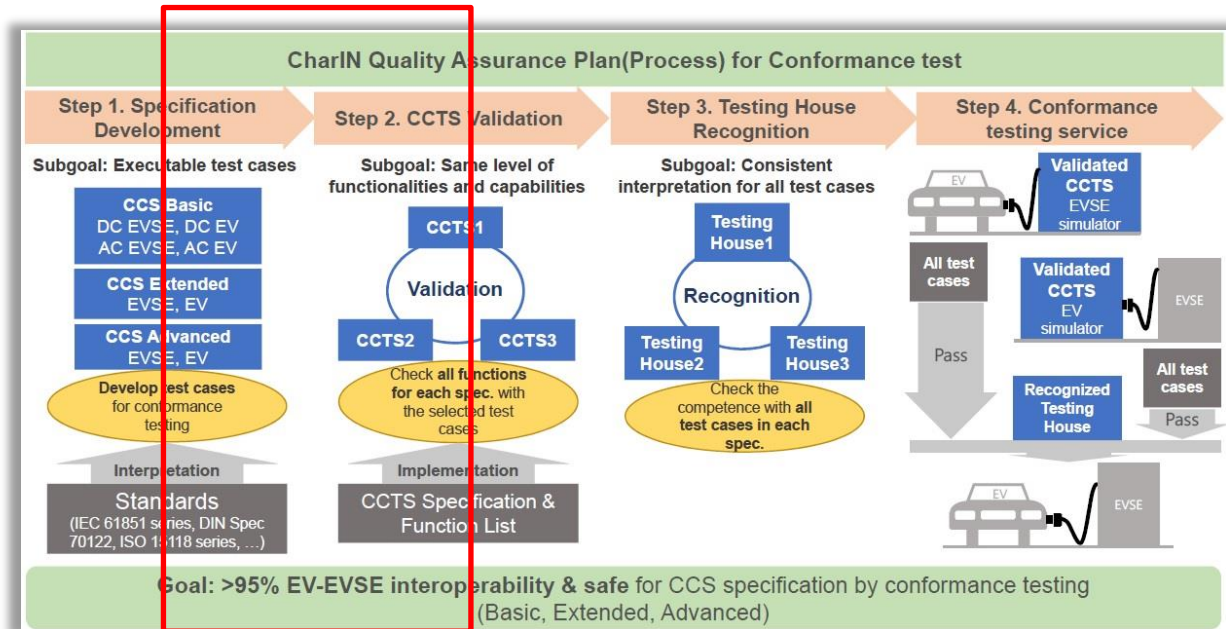
SAE J1772

##### CCS EV DC (Extended)

ISO 15118-4/5

IEC 61851-1/23 Ed2  
with ISO 15118-2/3

SAE J1772





# Agenda

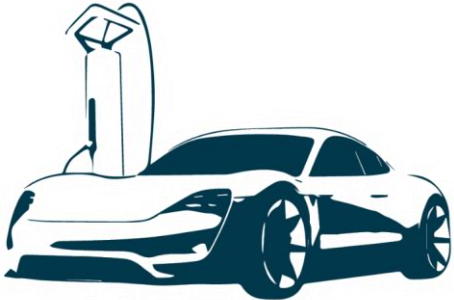
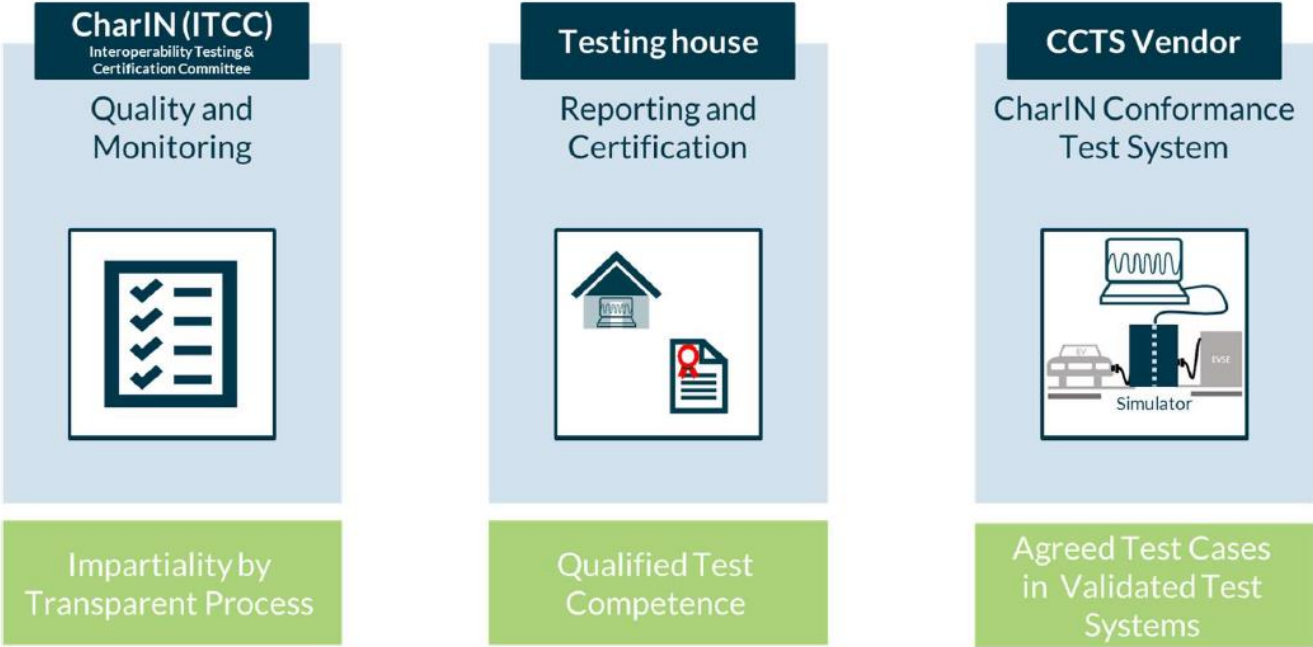
Maximizing Interoperability with certified Conformance Tests - May 7, 2025



ID	Topic
1	CharIN's Vision
2	CharIN's Big Picture for Conformance and Interoperability Testing
3	EVSE & EV Conformance & Interoperability Program
4	Conformance Testing Service

# 4. Conformance Testing Service

## CharIN Conformance Testing Scheme



# Thank you for your kind attention!

## Any questions?

### Contact

Phone +49 30 288 8388-0

Fax +49 30 288 8388-19

E-Mail [coordination@charin.global](mailto:coordination@charin.global)

[www.charin.global](http://www.charin.global)



[@CharlN e.V.](https://www.instagram.com/CharlN_e.V.)



# CHARIN